

purpose can be served by merely writing to the effect that the proper way of solving the problem of flight is by means of vertical screws or by imitating the action of birds' wings. When people can fly for an hour by one method they will scarcely be likely to try another. An actual demonstration of either of these alternative methods as applied to a man-carrying machine would, of course, be watched with considerable interest. Whatever may be the best and cheapest way of advancing aeronautical knowledge, it is probable that the human element and the feeling of "every man his own flying-machine" will appeal most to the Englishman, and more scientific methods will appeal more to the German, who has already arranged for translations of Mr. Lanchester's works.

Mr. Herbert Chatley¹ has directed attention to the part played by eddy formation in determining the flow of air in the wake of aeroplanes. This factor may introduce dangers in a flying-machine should the rate of eddy formation coincide with the period of free oscillation. Accidents from a similar cause have frequently occurred in other branches of engineering, and it seems very probable that some day we shall have an object-lesson of the kind in aeronautics. But the study of these eddies affords an interesting recreation for those who like to look into the matter. The side of a ship is a good place for watching eddy formation, but a better place is a dusty road along which motor-cars are passing. Here anyone can see the eddies being thrown off at perfectly regular intervals, each picking up a separate cloud of dust and whirling it high into the air. If the observer cared to carry his researches further he might get a motor-car, and try attaching tails of different sizes and shapes to it until he got one in which the eddy formation was reduced to the smallest possible amount, and the air resistance would probably be also reduced. He would not succeed in abolishing dust altogether, nor would he make a fortune by taking out a patent; but he would discover a more effectual means of reducing the dust nuisance than by writing complaints to the newspapers.

G. H. BRYAN.

MARINE BIOLOGY.

THE work of the Danish naturalists on behalf of the International Commission for the Investigation of the Sea is greatly enriching our knowledge of the natural history of important sea-fishes. In "Serie Fiskeri," Bind ii., Nos. 5-8, of the Danish "Meddelelser fra Kommissionen for Havundersøgelser," there are several important papers by Dr. Johs. Schmidt, a naturalist well known for his discovery of the breeding-places of the common eel of European rivers.

In No. 6 Dr. Schmidt records the results of marking experiments with plaice and cod in the waters around Iceland. Of numerous mature plaice caught, labelled, and liberated in the summer of 1905 off the north and east coasts respectively, those re-captured of the former batch were found to have travelled westward, the latter southwards along the east coast and then westwards along the south coast, taking in each case the shortest route to the warm Atlantic waters. Here in winter and spring they spawn. The eggs and fry are then carried passively along by the Atlantic stream (Irminger current), which sets eastwards in spring and summer, and the just-transformed young appear successively in the bays and fjords, first on the west, later on the north, and later still on the east coast. Immature cod, caught, labelled, and liberated at the same time as the plaice on the north-east coast, did not migrate, but remained

on that coast throughout winter, and even for one to two years after liberation. It was also found that one-year-old cod were much more numerous on the east coast than on the south and west. On the other hand, the eggs of the cod was absent in hauls with pelagic nets made on the north and east coasts, but plentiful on the west and south. From these facts it appears that the peculiar hydrographical conditions round Iceland involve a double migration of considerable extent on the part of cod and plaice, viz. (1) the passive drift with the eastward-setting Atlantic stream of eggs and fry born off the south and west of the island; (2) the active return migration of spawning fishes to the warm water, due to their special sensitivity to external conditions on the approach of the spawning season.

Another noteworthy result of these marking experiments is to show that Iceland plaice grow at an average annual rate of 2-3 centimetres, much slower, therefore, than in the North Sea. The most obvious cause of this is the low temperature of the water, on the east and north coasts especially, and the short summer. It is also interesting, from the practical fishery standpoint, to note that more than 60 per cent. of the re-captured marked plaice were taken by English steam trawlers.

Hitherto the post-larval stages of those North Atlantic gadoids, viz. the hake (*Merluccius vulgaris*), *Molva elongata*, and *Raniceps raninus*, have not been described or figured in literature. In No. 7 Dr. Schmidt gives descriptions and figures of thirteen different post-larval stages of the hake. All these were carefully identified with the adult by counting the numbers of vertebrae and fin-rays. The paper also contains a summary of the distinctive characters of various gadoids in the post-larval stage.

In No. 8 there are described seven different post-larval stages of *Raniceps raninus*, a remarkable-looking plump form, somewhat resembling a post-larval Liparis species, and differing from other post-larval gadoids in not possessing the usual three post-anal bars of pigment. In this number also are described and figured four different post-larval stages of *Molva elongata* and *Molva byrkjelange*. These two forms, in regard to which Holt and Byrne thought "a single species was enough for the reception of both," are shown to have perfectly distinct post-larval forms with characteristically different arrangements of pigment. The geographical distribution of the two forms, as Dr. Schmidt points out, is also quite different, so that there can now be no doubt that we have to deal with two species.

In No. 5 Ove Paulsen describes and figures all the species of Peridiniales so far known to occur in Danish waters. The Peridiniales are a most important group of unicellular organisms from the standpoint of the student of plankton, since certain species of them appear to be characteristic of water of neritic and oceanic origin respectively. The descriptions appear to be adequate, and there are usually figured several different views of each form. There is also a copious list of literature at the end.

NOTES.

At the general meeting of the Royal Society of Edinburgh, held on October 26, Sir William Turner, K.C.B., F.R.S., was elected president of the society.

THE King has granted his Royal licence and authority to Dr. Ludwig Mond, F.R.S., to wear the decoration of the Grand Cordon of the Crown of Italy conferred upon him.

¹ *Aeronautics*, August, 1908.

THE organising committee of the Anthropological Congress has postponed the date of the fourteenth congress. Instead of being held at Dublin in 1909, it will take place in 1910.

THE opening meeting of the new session of the Institution of Electrical Engineers will be held on Thursday, November 12, when the president, Mr. W. M. Mordey, will deliver his inaugural address.

THE council of the Institution of Civil Engineers has made the following awards for the year 1907-8:—Telford gold medals to W. B. Parsons and Dr. H. Lapworth; a Watt gold medal to Sir Whately Eliot; George Stephenson gold medals to Sir John W. Ottley, K.C.I.E., Dr. A. W. Brightmore, J. S. Wilson, and W. Gore.

PROF. R. H. CHITTENDEN, director of the Sheffield Scientific School of Yale University, has, we learn from *Science*, been appointed the University's representative at the Darwin celebration to be held at the University of Cambridge next June.

THE death is announced, at sixty-two years of age, of M. Gustave Canet, president of the Junior Institution of Engineers. M. Canet was president of the Institution of Civil Engineers of France, and one of the founders of the French Association for the Advancement of Science.

THE death is announced of M. Paul Berger, the eminent French surgeon. M. Berger was a member of the Paris Academy of Medicine, and took an active and authoritative part in the discussions of the society. He also belonged to the French Anatomical Society and to the Société de Chirurgie, of which he was president.

THE *Pioneer Mail* understands that a special pension has been granted by the Government of India to Dr. Eugen Hultsch, who recently retired from the editorship of *Epigraphia Indica*, the journal of Indian antiquarian research, in recognition of his services to Indian archæology. Dr. Hultsch went out to the archæological department in India in 1886.

THE death is announced of Dr. Cuthbert Collingwood at the age of eighty-two. Dr. Collingwood was elected a Fellow of the Linnean Society so long ago as 1853, and was a foreign member of the Physico-Economic Society of Königsberg. He was the author of "Rambles of a Naturalist in the China Seas," and of various scientific papers in the Transactions of the Linnean Society and other publications.

THE annual Huxley memorial lecture of the Royal Anthropological Institute will be delivered by Prof. W. Z. Ripley, of Harvard University, on Friday, November 13, at 8.30 p.m., in the theatre of the Civil Service Commission, Burlington Gardens, W. (by permission of the First Commissioner of Works). Prof. Ripley has taken for his subject "The European Inhabitants of the United States." Tickets can be obtained on application to the secretary of the Royal Anthropological Institute, 3 Hanover Square, W.

THE annual general meeting of the Junior Institution of Engineers was held at the Royal United Service Institution, Whitehall, on October 19, the chairman, Mr. Frank R. Durham, presiding. The report of the council referred to the election of Mr. James Swinburne, F.R.S., as president in succession to the late M. Gustave Canet. Special reference was made to the foundation of the Durham bursary, due to the kindness of Mrs. F. R. Durham. The

award for the year 1908-9 has gone to Mr. L. M. Jockel, of Edinburgh, his thesis being on the subject of electricity in mining.

WE notice with regret the death, in his seventy-fourth year, of Mr. Henry Chapman, who did notable work in the development of the application of machine tools actuated by hydraulic power, the perfecting of torpedo machinery, and with air compressors. He introduced the Giffard injector into this country, and was one of the pioneers of the principle of distributing high-pressure water. Mr. Chapman was elected vice-president of the Institution of Mechanical Engineers in 1907. He belonged to the Iron and Steel Institute, and was a member of the Institution of Civil Engineers and of the Institution of Naval Architects. He was decorated by the French Government in 1878 as Chevalier of the Legion of Honour and was promoted to the rank of officer in 1889.

THE International Electrotechnical Commission held its first council meeting at the new home of the Institution of Electrical Engineers, on the Victoria Embankment, on October 19. The Right Hon. A. J. Balfour welcomed the delegates of eighteen countries, and spoke of the intimate relations existing between theory and practice in electricity. From the report of Colonel R. E. Crompton, it appears that electrotechnical committees have been officially constituted in ten countries, while in six other countries committees are to be formed in the near future. The French committee urges the adoption of the metric system, and has also raised the question of a provisional standard of light. The council in committee is also to deal with matters relating to nomenclature, symbols, and regulations for fire insurance for interior electrical wiring.

WRITING to the *Times* of October 24 with reference to the destruction of ancient monuments on Dartmoor, Mr. G. Hubbard states that on Bush Down the sockets may be seen on the side of the hill where an alignment of stones was torn up four years ago, and that portions of another stone alignment on the common land on the same Down have within recent weeks been converted into road metal. It appears to be a common practice with road-makers in the district to collect stones from the moor and to break them up into road metal. One road-maker questioned by Mr. Hubbard said he had no definite instructions as to which stones to use for this purpose, but "he always took those which were handiest." If local authorities and landowners would insist that the stones for road-mending should be obtained from roadside quarries, some check would be placed upon these deeds of vandalism while we are awaiting an Act to render such proceedings illegal.

IT will be remembered that on February 29 last Prince Roland Bonaparte placed at the disposal of the Paris Academy of Sciences four yearly sums of 25,000 francs for the encouragement of scientific research among men of science not belonging to the academy. The grants are intended exclusively to encourage discoveries and to assist scientific workers who, having accomplished some successful original research, are unable for want of sufficient funds to undertake or to complete investigations. The first grant was made by the academy last June, in accordance with the report of a special commission. The three next annual grants will be made on July 15 of each of the three years 1909-11. No grant of less than 2000 francs will be made. Men of science desirous of participating in the awards must apply to the academy, either directly or through a member of the academy, before January 1 of each year. A precise statement of the work proposed

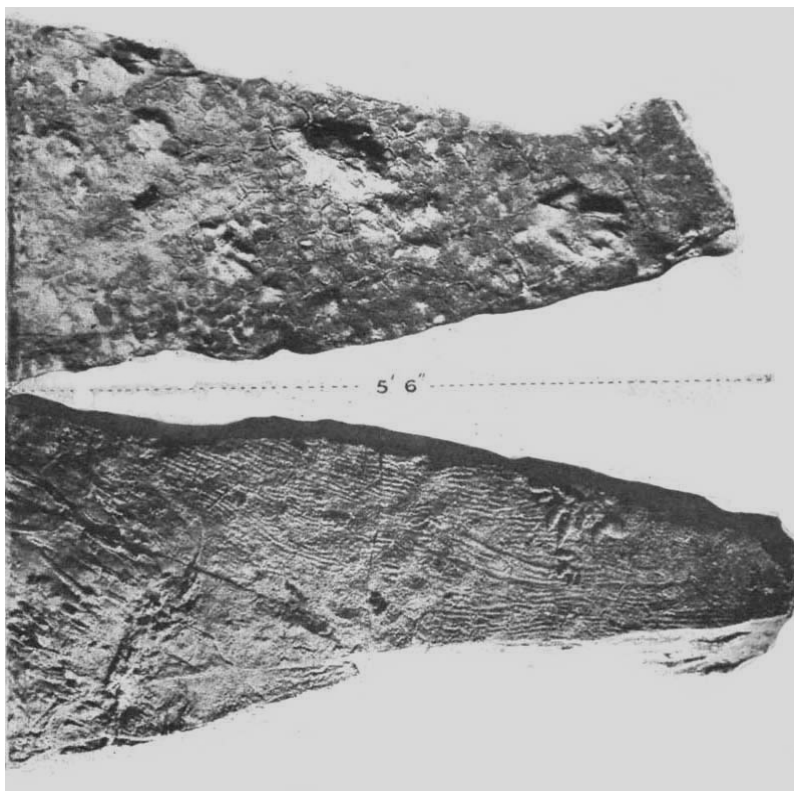
to be carried out, and the amount necessary for its completion, must be made. Beneficiaries will be expected to report to the academy within twelve months how the grant has been expended, and the results obtained. Non-compliance with this rule will disqualify for future grants. The first announcement of any results must in all cases be made to the academy.

THE annual dinner of the Institution of Electrical Engineers was held at the Hotel Cecil on October 22, when some of the delegates to the International Conference on Electrical Units and Standards and to the International Electrotechnical Commission were present. Mr. Haldane proposed the toast of "Science and Industries." "A few years ago," he said, "it may have seemed as if the domination of science over what science is applied to had its highest illustration in the application of pure mathematics to physics. But we seem to have got a stage beyond that. There is a topic which is of fascinating interest, and that is the domination which a new generation altogether of pure mathematicians are asserting over the old mathematicians. The conception of number which many people think they are quite familiar with has proved to be quite obscure. In days which are long gone by, people were content to take the motion of a point in space, the line of the curve it described, and accept that as the ultimate standard by which to bring their mathematical theories to the test. On it they based the infinitesimal calculus, just as physicists have been engaged for the last fortnight in seeking standards on which to base and test their electrical practice. But in these days, when everything is questioned, there has arisen a new school which has brushed aside the old notions of space as an exact test to which to refer the mathematical theories of the day. This is a sign of the times and an indication of how men are asserting the necessity of absolute and clear conceptions as the basis of everything. Whether we take a great industry like the telephone, or such things as the science of aerial navigation, it requires a great deal of science to be applied to it before we get it on to a secure basis. Or, if we take the conceptions of the higher mathematics to-day, we are faced with the same tendency which keeps men always busy, always striving after some more general conception to which to refer back what is being worked at. We cannot stand still. In every nation more and more one is impressed with the special excellences which are being developed, with the way in which new men are coming to the front and new truths are being born. And there is this great satisfaction, that there is no real rivalry in the search after truth. Everyone is proud of the contribution of his neighbour, of whatever race. We must bear in mind that all men of science, of whatever nationality, are converging on a

common problem when working at the application of science to industry."

THERE has recently been placed on exhibition in the British Palæontological Gallery of the Liverpool Museum a slab of Keuper sandstone taken from a quarry at Storeton, Cheshire, which well illustrates almost all the varied traces of life of the Trias found in the neighbourhood. The slab was quarried about 50 feet from the surface, at the level recognised locally as the "footprint beds." It is about 8 inches in thickness, and exhibits impressions on both surfaces—as indentations on what *in situ* was the upper surface, and in relief on what was the under surface. The impressions consist of well-marked footprints of both fore and hind feet of the labyrinthodont *Chirotherium* in

Upper side.



Under side.

Footprints and other markings upon a slab of Keuper Sandstone in the Liverpool Museum.

several well-defined tracks, footprints of the rhynchocephalid *Rhynchosaurus*, and casts of a group of fragments of stems of the fossil genus of plants *Equisetites*. The type-specimen of *E. keuperina*, also from Storeton, is exhibited in an adjoining case, and the casts on the slab are either the same species or closely allied to it. The joints or nodes and the grooving of the stem are distinctly seen. The slab also exhibits good examples on one side of "ripple marks" and on the other of "sun cracks," and altogether forms a rather unique museum specimen.

IN reply to an inquiry as to what hardy flowering plants and shrubs are especially attractive to butterflies, Mr. R. Hooper Pearson has sent us the following information:—

Among plants which are most frequented by butterflies are those following:—*Sedum spectabile*, *S. Sieboldii*, *Reseda odorata* (mignonette), *Cistus ladaniferus*, *Limnanthes Douglasii*, *Borago officinalis* (Borage), *Pulmonaria officinalis* (lungwort), *Viola odorata* (sweet violet), *Alyssum maritimum* (sweet Alyssum), *Phacelia tanacetifolia*, *Gilia tricolor*, *Gilia nivalis*, *Aster Amellus*, and *Helianthus* (sun-flowers); but almost all flowers that produce honey or nectar are visited by butterflies as well as bees, though the construction of some flowers prevents the butterflies and bees from reaching the nectar secreted in them. Among "honey" flowers may be mentioned Apple, Apricot, Peach, Pear, Plum, Cherry, Raspberry, Blackberry, *Anchusa italica*, Arabis, Wallflower, Crocus, Snowdrop, Godetia, Lupin, Magnolia, Maple, Salvia, Phlox, Scabious, Sage, Malope, Ivy, *Cercis Siliquastrum* (Judas tree), *Tilia vulgaris* (lime), common Thyme, *Tropaeolum majus* and *minus*, *Wistaria sinensis*, *Acer pseudo-platanus* (sycamore), *Vitis vinifera* (grape vine), *Fragaria* (strawberry), *Cytisus*, *Ribes* (currant), *Acacia*, *Clarkia*, *Ribes grossularia* (gooseberry), *Asparagus*, *Trifolium* (clover), *Collinsia*, *Cucumis* (cucumber and melon), *Genista*, *Nepeta Glechoma* (ground ivy), *Erica* (heather), *Leptosphon*, *Allium* (onion), and *Vicia* (vetch). If it be desired to attract butterflies permanently to the garden, means should be taken to prevent sparrows becoming numerous, as these birds have been observed in the act of eating the perfectly developed butterflies.

THE *Philippine Journal of Science* for July (iii., No. 3) contains several important papers, notably one by Assist.-Surg. Garrison on the prevalence and distribution of the animal parasites of man in the Philippines, and another by Dr. Strong on the diagnosis of African tick fever and the differentiation of the species of human spirochaetes.

It has been found by Bail and others that blood serum, and particularly the serum of pathological exudates, may favour infection by micro-organisms. Thus a germ-free exudate, harmless in itself, may, if mixed with a non-harmful dose of a pathogenic bacterium, cause a fatal infection. Bail has supposed that substances derived from the bacteria are present in the exudate, which neutralise or antagonise the natural defences of the body; to such substances the name of "aggressins" has been applied. Cole and Smirnow have found that normal pigeon and rabbit sera exert an "aggressive" effect with the pneumococcus, and suggest that this may therefore be due to the natural toxic action of serum, and not to the hypothetical aggressins derived from bacteria in serum exudates (Bull. Johns Hopkins Hosp., September, 1908, p. 249).

DR. F. A. BATHER was mentioned in a brief note (NATURE, October 15, p. 609) on Mr. A. H. Clark's paper on the nomenclature of crinoids. The note apparently suggested that he had attempted to revise the names of the crinoid genera, which number some 500, and that, in Mr. Clark's opinion, he was only right in two cases. This is not the case. The facts are stated by Dr. Bather as follows:—"In his most useful revision of the nomenclature of the recent crinoids, Mr. Clark refers to my essay on *Pentacrinus*: a Name and its History' (1898), which dealt with the numerous names applied at different times to five genera, and apparently he agrees with me as to the names to be applied to four of these genera. As to the fifth, I may have been wrong in adopting *Encrinus* from C. F. Schulze; but that is a matter of opinion."

MR. F. A. LUCAS, curator-in-chief of the museums of the Brooklyn Institute of Arts and Sciences, in his report

for 1907 directs attention to the opening of the new eastern wing of the main building. He adds that, for want of sufficient case-room, he has found it impossible to put the natural exhibits in the condition in which he should like to see them. He hopes, however, that in the course of the next two years it will be possible to do more in this respect than it has been found practicable to accomplish during the past decade. The museum sent a collecting expedition to Venezuela and Trinidad, of which an account will be found in the report, which also contains a history of the rise of the Brooklyn Museum.

WE have received from the publishers—Messrs. Macmillan and Co., Ltd.—two samples of a series of coloured pictures of farm animals, reproduced in chromolithography from paintings by Mr. J. Macfarlane. Each picture measures 30 inches by 20 inches, and the animal occupies nearly the whole length of this space, so that the series is suitable for display in large rooms, such as schools and colleges. The animals depicted are all prize-winners or champions, those shown in the samples received being the shorthorn "Sweetheart" and the Ayrshire "Adam-hill Bertha 2nd." The reproductions appear singularly successful, and as the surface is highly glazed, the pictures can be framed and hung without glass. In connection with this subject it may be mentioned that, on the closing of the exhibition at Earl's Court, the Hungarian Minister of Agriculture presented to the natural history branch of the British Museum a number of the beautiful miniature models of domesticated horses, cattle, sheep, pigs, and poultry executed by Mr. Georges Vastagh, of Budapest.

THE female crayfishes of the genus *Cambarus* inhabiting America east of the Rocky Mountains have long been known to differ from their relatives of other parts of the world by possessing special receptacles for the sperm in the shells; the sperm in other species being deposited on the general surface of the shell. The examination of a Cuban and a Mexican species has now enabled Mr. E. A. Andrews to state (Proceedings of the Washington Academy of Science, vol. x., p. 167) that the presence of sperm-receptacles is common to all the representatives of *Cambarus*, as it is to the American lobster. These chambers, although occurring in both groups on the under surface of the body, do not, however, correspond structurally, the receptacle in the lobster being an external space roofed over by the annular plate of the seventh thoracic segment, whereas in the crayfishes it is a narrow pocket excavated in the same plate.

IN a supplement to the Journal of the South African Ornithologists' Union for 1908, issued as a separate pamphlet of the Bird Protection Committee of the union, Mr. Alwin Haagner discusses the economic relations of the local birds-of-prey and the treatment they deserve at the hands of the agriculturist and stock-owner. Throughout the world most birds-of-prey, both diurnal and nocturnal, are the subject of suspicion or persecution, and it appears that quite recently the Transvaal Game Protection Association offered a reward for the destruction of hawks of all kinds, a proceeding which gave rise to a protest from the author of the present pamphlet. With the possible exception of Pel's fishing-owl, which may kill guinea-fowls, all the nocturnal species are wholly beneficial, as are also very many of the diurnal group, including all the vultures. A certain number of diurnal birds-of-prey, such as the crested hawk-eagle and the bateleur eagle, are partially beneficial and partially harmful, while a small group, including most of the eagles and a few hawks, is held to be wholly mischievous.

WE have to acknowledge the receipt of a copy of vol. ix. (ser. 3) of the *Anales del Museo Nacional de Buenos Aires*, several of the articles from which have already been noticed in our columns. Among those not so mentioned, reference may be made to two by Mr. F. Lahille on Argentine cetaceans, one relating to a supposed new species or subspecies of dolphin of the genus *Tursiops*, and the other to the occurrence of *Balaenoptera acutirostrata* (= *rostrata*) in the South American Atlantic. As regards the former, it will suffice to mention that the author appears to be unacquainted with the papers on the dolphins of this group contributed by Mr. Lydekker to the *Journal of the Bombay Natural History Society* and the *Proc. Zool. Soc.* In connection with the second, it is remarkable that the author once more resuscitates the (we had heard obsolete) theory of the descent of cetaceans from ichthyosaurs. Here again we note the absence of any reference to Dr. Fraas's proof of the origin of the presumably cetacean Zeuglodonts from primitive Eocene land Carnivora.

WE have received two bulletins from the Experiment Station of the Colorado Agricultural College. No. 130 deals with the evergreen trees of Colorado, and describes the native pines, spruces, firs, junipers, and red cedars from the botanical and economic point of view. There are several good illustrations. No. 128 deals with lucerne. Attention is directed to the fact that lucerne, being a deep-rooted leguminous plant, increases the supply of nitrogen and of organic matter in the soil, and thus tends to maintain the fertility of land which is being heavily cropped with sugar beets and other exhausting crops. Numerous varieties are described, and their relative values under the conditions of the trial are indicated.

INCREASING attention is now being devoted to the production of cacao in the West Indies, and some account of the investigations on this crop made by the scientific staff of the Department of Agriculture is given in the *West Indian Bulletin*, vol. ix., No. 2, and in a recent issue of the *Agricultural News*, the periodical published by the Department. Fertiliser experiments have been made to discover the sort of manuring necessary, and attempts have been made to improve the crop by selecting promising sorts and then propagating them by grafting or budding. The various diseases to which the crop is liable have also been studied, and systematic operations started for coping with them. The whole work furnishes another example of the great benefit conferred on the industries of the West Indies by the scientific staff.

BULLETIN No. 113 of the West Virginia Agricultural Experiment Station gives some interesting notes on the habits of mice, voles and shrews, particularly from the economic standpoint. The short-tailed shrew (*Blarina brevicauda*) is considered to be beneficial to farmers, and is recommended for protection. Brewer's mole (*Parascalops breweri*) may do a certain amount of injury because of the number of earthworms it eats, and the rather unsightly mounds of earth it throws up, but it destroys so many grubs that on the whole it is classed as useful. On the other hand, the various field mice, of which two are described (*Microtus pennsylvanicus* and *M. pinetorum scalopsoides*) are regarded as wholly injurious, and their destruction by strychnine is urged. The bulletin is well illustrated with photographs.

IN *Symon's Meteorological Magazine*, July-September, the Rev. D. C. Bates describes some recent and costly rain-making experiments by gun firing in the Oamaru district of New Zealand, which may be considered useful

in so far as they once more prove their absolute futility. From various causes the district is subject to long droughts; an influential committee was formed to organise the experiments, for which a large sum of money was readily subscribed, and was supplemented by the Government, Mr. Bates being requested to watch and report upon the results. The weight of the charges varied from 50 lb. to 200 lb.; these were primed with dry gun-cotton and fired by a dynamite detonator attached to a slow burning fuse, and in nearly all cases complete detonation took place. The times chosen for the experiments were generally those when atmospheric conditions were considered to be favourable for rain. Although rain occasionally fell within a reasonable time, Mr. Bates could only conclude that it was a mere coincidence, and that "the explosions had apparently no more effect on the vast expanse of the air than would the striking of a match in a room."

IN a short note in the *Annals of Mathematics* for July, Prof. J. L. Coolidge proves a theorem, which he states he has not previously seen, according to which, if a set of ratios between positive integers are equal to one another, then all are equal to the ratio of the greatest common divisor of the numerators to that of the denominators, and also to the corresponding ratio of the lowest common multiples.

MESSRS. B. G. TEUBNER, of Leipzig, have issued an elegantly bound volume, of more than 500 pages, containing a catalogue of their published works on mathematics and allied sciences. To the English reader this list should afford an object-lesson as to the value which is attached to scientific progress and advancement by our German rivals. The book was prepared for the International Mathematical Congress at Rome this spring. It is illustrated by portraits of eminent mathematicians, including a frontispiece of Galileo Galilei, and in addition to alphabetical and subject indices it contains an introductory account of the principal works published by the firm from the middle of last century, and a calendar of births, deaths, and other important events in the mathematical world, by Prof. Felix Müller, of Dresden.

A NEW work is announced for early publication by Mr. Elliot Stock, under the title "Saint Gilbert: the Story of Gilbert White and Selborne," by Mr. J. C. Wright.

PROF. R. W. WOOD has written another amusing set of verses for children, illustrated with quaint drawings. Attention was directed on a previous occasion to the character of the volume "How to Tell the Birds from the Flowers." The present volume is entitled "Animal Analogues," and is published by Messrs. Paul Elder and Company, of San Francisco and New York. Its price is 50 cents net.

THE best form of the mariner's compass card, so described and reproduced in *NATURE* of September 24 (p. 509), is the registered design of Mr. F. Howard Collins, of Torquay, and has been awarded a diploma for bronze medal at the Franco-British Exhibition. A specimen of Mr. Collins's card was submitted to us two years ago, and was commented upon at that time (vol. lxxiv., p. 594).

WITH reference to the review of "Science and Empiricism" (*NATURE*, October 15, p. 603), Mr. Daniel writes that cancer must be due to loss of energy in the cell, and not to bacteria. This point was not referred to in the review; in fact, the trend of opinion at present is against the parasitic origin of cancer. The reviewer took exception to the extremely imaginative conception of the cancer process as expressed in the book.

A SIXTH edition of Prof. Strasburger's "Handbook of Practical Botany," translated and edited by Prof. W. Hillhouse, has been published by Messrs. Swan Sonnenschein and Co., Ltd. Considerable textual revision has been effected, some new figures have been introduced, the chapter on cell and nuclear division has been in part rewritten, and Prof. Hillhouse has rearranged the material in such a way as to illustrate grades in cytological technique.

MESSRS. A. E. STALEY AND CO., Thavies Inn, London, E.C., have forwarded us a copy of the September issue of *Prism*, a little magazine published by Messrs. Bausch and Lomb Optical Co., Rochester, N.Y., U.S.A. This issue deals popularly with the manufacture of the microscope. Messrs. A. E. Staley and Co., who are the exclusive agents of the American company in England and the colonies, will send a copy of the magazine to any interested reader on receipt of a stamp for postage.

MESSRS. LONGMANS, GREEN AND CO. have published a second edition of Mr. J. P. Johnson's "The Stone Implements of South Africa," which was reviewed at length on its first appearance in our issue for May 30, 1907 (vol. lxxvi, p. 99). The volume has been revised and enlarged, further discoveries of the author have been incorporated, and a number of new illustrations added. The comprehensive terms adopted in the first edition have been replaced by the current European nomenclature, though most of the data remains the same. The volume possesses neither index nor table of contents. The price of the new edition is 10s.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL OCCURRENCES IN NOVEMBER:—

- Nov. 4. 21h. 10m. Saturn in conjunction with the Moon (Saturn $2^{\circ} 42' N.$).
 ,, 11h. 16m. to 13h. 56m. Occultation of β Piscium (mag. 4.7).
 9. 8h. 16m. to 9h. 14m. Occultation of ϵ Tauri (mag. 3.7).
 10. 9h. 45m. to 10h. 29m. Occultation of σ Tauri (mag. 4.8).
 12. 10h. 58m. Neptune in conjunction with the Moon (Neptune $2^{\circ} 36' S.$).
 13. Mercury at greatest elongation, $19^{\circ} 18' W.$ of the Sun.
 16. 21h. 42m. Jupiter in conjunction with the Moon (Jupiter $4^{\circ} 20' S.$).
 20. 3h. 42m. Venus in conjunction with the Moon (Venus $3^{\circ} 6' S.$).
 ,, 9h. Vesta in conjunction with the Moon (Vesta $0^{\circ} 40' N.$).
 21. 23h. 16m. Mercury in conjunction with the Moon (Mercury $1^{\circ} 55' S.$).
 23. 15h. Ceres in conjunction with the Moon. (Ceres $0^{\circ} 14' N.$).
 26. 14h. 6m. Uranus in conjunction with the Moon (Uranus $1^{\circ} 17' N.$).
 30. 11h. 15m. Venus in conjunction with Mars (Venus $1^{\circ} 17' N.$).
 ,, 8h. 46m. to 9h. 50m. Occultation of τ^2 Aquarii (mag. 4.3).

MOREHOUSE'S COMET, 1908c.—This object has now become visible to the naked eye, and may be picked up, on a clear night, by any keen-sighted observer who has an idea of its approximate position. Photographs taken at the Solar Physics Observatory, South Kensington, with the 6-inch Dallmeyer camera on October 23 show tails nearly 2° in length, whilst those taken with the 36-inch reflector show a complex series of streamers going to the edge of the plate.

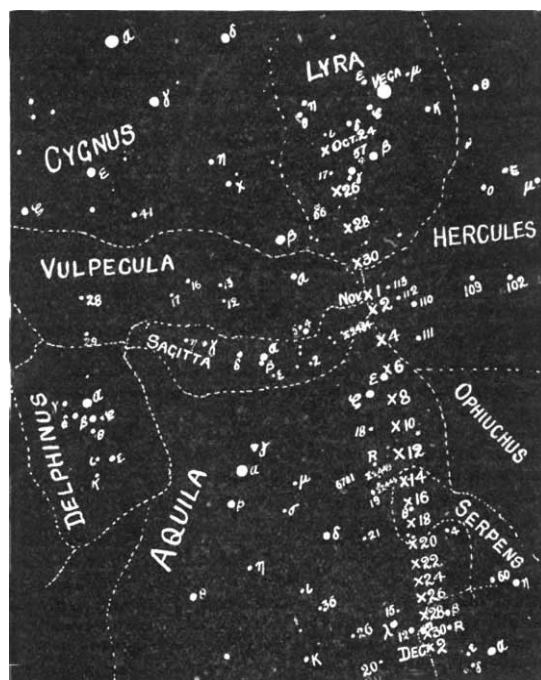
Observations recorded in No. 4277 of the *Astronomische Nachrichten* (p. 84, October 20) appear to confirm the suggestion that the comet and tail have suffered some remarkable changes in visibility. Dr. H. Thiele states

that both the length and breadth of the tail and the visibility of the comet have varied. According to his observations the length of the tail has varied between $10'$ and 2° , and the breadth, within $10'$ of the nucleus, from 15° to 40° ; the dates of the longest and narrowest tails were September 12, 15, 20, 23–27, October 4 and 5.

Prof. Hartwig also reports changes from October 2 to October 5 and 6, and suggests a periodic outburst of tail material.

A telegram from Prof. Pickering to the Kiel Central-stelle states that Messrs. Metcalf and Morehouse each announce a remarkable change in tail of Morehouse's comet on October 15, a change which is confirmed by the Harvard observations.

We give below part of the ephemeris published in No. 4276 of the *Astronomische Nachrichten* by Prof. Kobold, and the accompanying chart indicates approximately the



Path of Comet 1508c, October 24 to December 2, 1908.

position of the comet, in regard to the brighter stars, according to this ephemeris, for every alternate night from October 24 to December 2.

Ephemeris 12h. M.T. Berlin.

1908	α (true) h. m.	δ (true)	$\log r$	$\log \Delta$	Bright- ness
Oct. 28 ... 19	1 2 ...	+27 58.6 ...	0.1369 ...	0.0443 ...	5.6
29 ... 19	0 2 ...	+26 27.5 ...			
30 ... 18	59.3 ...	+24 58.4 ...			
31 ... 18	58.5 ...	+23 31.4 ...			
Nov. 1 ... 18	57.7 ...	+22 6.5 ...	0.1222 ...	0.0629 ...	5.5
2 ... 18	57.0 ...	+20 43.7 ...			
3 ... 18	56.3 ...	+19 23.0 ...			
4 ... 18	55.7 ...	+18 4.3 ...			
5 ... 18	55.2 ...	+16 47.7 ...	0.1073 ...	0.0836 ...	5.4
6 ... 18	54.7 ...	+15 33.2 ...			
7 ... 18	54.2 ...	+14 20.6 ...			
8 ... 18	53.8 ...	+13 10.0 ...			
9 ... 18	53.4 ...	+12 1.3 ...	0.0923 ...	0.1054 ...	5.2
10 ... 18	53.1 ...	+10 54.5 ...			
11 ... 18	52.8 ...	+9 49.5 ...			

EPHEMERIS FOR COMET TEMPEL₃-SWIFT, 1908d.—The recent observations of the Tempel₃-Swift comet have enabled M. Maubant to re-determine the most probable time for the perihelion passage and to calculate a new ephemeris. He finds that it is necessary to retard the